Cox regression hazard ratios for revision of THR at 5-years based on UK GPRD data (1991 - 2006)

	Total Hip Replacement	
Predictor variable	Hazard ratio	95% CI
Age, years (Ref: 60 to 69)		
Less than 60	3.82	1.66, 8.78
60 to 69	1.00	
70 and over	2.92	1.34, 6.38
Gender (Ref: Female)		
Female	1.00	
Male	1.20	0.70, 2.05
BMI, kg/m2 (Ref: 25 to 29.9)		
Under 18.5	Not estimable	
18.5 to 24.9	1.00	
25 to 29.9	1.51	0.78, 2.94
30 to 34.9	2.63	1.27, 5.46
35 and over	2.65	0.87, 8.08

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SEVERITY OF OSTEOARTHRITIS SYMPTOMS AND DISABILITY PREDICTS RISK FOR SERIOUS CARDIOVASCULAR EVENTS

G.A. Hawker [1], R. Croxford [2], A. Bierman [3], P. Harvey [1], L. Lipscombe [1]. [1] *Women's Coll. Hosp., Toronto, ON, Canada;* [2] *Inst. For Clinical And Evaluative Sci., Toronto, ON, Canada;* [3] *Univ. of Toronto, Toronto, ON, Canada*

Purpose: Reduced physical activity due to painful osteoarthritis (OA) may increase risk for serious adverse outcomes related to cardiovascular disease (CVD) through its effect on weight gain, fitness, and diabetes or hypertension (HT) control. Depressed mood may exacerbate this trajectory due to its effect on adherence to treatment and behavioural risk factor modification. Our objective was to determine the relationship between hip/knee OA severity and risk for serious adverse cardiovascular (CV) outcomes.
Methods: This retrospective cohort study utilized data from a longitudinal population cohort with moderate-severe hip/knee OA recruited in 1996-98 through survey of 100% aged 55+ years in two regions of Ontario, Canada. Baseline interviews assessed socio-demographics, OA severity (WOMAC), body mass index (BMI), mental and general health status (SF-36), and self-reported comorbidity, and were linked with Ontario health administrative databases to assess adverse health outcomes and health care use. Our primary outcome was an emergency department visit or hospitalization for a serious adverse CV event (angina, acute myocardial infarction (AMI), stroke or transient ischemic event (TIA), congestive heart failure (CHF), coronary artery bypass graft (CABG) or all-cause death), defined using published, validated algorithms from baseline to 2011. Cox proportional hazards regression was used to examine the contribution of OA symptom severity (quartiles of WOMAC summary scores) to time to first CVD outcome, unadjusted and then adjusted for other covariates. Individuals were censored if they emigrated or died, or at the end of available data (February 28, 2011).
Results: Of 2,411 baseline cohort participants, 2,386 were included in our analyses (mean age 71 years (SD 9.4) and 72% female). Over a median 8.1 yrs (IQR 3.4-13.9 yrs), 69.9% experienced our composite outcome (54.4% died; hospital visit for CHF 16.0%, angina 19.3%, stroke/TIA 9.9%, AMI 8.8%, CABG 1.3%). Univariate analyses found that risk of an adverse CVD outcome increased significantly with increasing WOMAC quartiles (Wilcoxon $p < 0.0001$). In multivariable analyses, risk also increased with increasing age, male sex, rural residence, lower neighbourhood income, higher baseline CVD risk, diabetes diagnosis, increasing comorbidity, and more visits to specialists in the pre-baseline year, but declined with increasing BMI. Controlling for these factors, the risk of an adverse CVD outcome was independently and significantly associated with increasing OA severity ($p=0.03$ for WOMAC summary score). Controlling for other factors, a significant relationship for WOMAC was also seen with death ($p=0.03$) and CHF ($p=0.03$), but not AMI ($p=0.09$), stroke ($p = 0.07$) or angina ($p=0.13$).
Conclusions: In a population cohort with at least moderate hip/knee OA symptoms and disability, greater baseline OA severity was an independent risk factor for serious adverse CVD outcomes. Confirmation in other populations is needed, and, if shown, suggests the need for more explicit consideration of OA, and its impact, in chronic disease prevention and management.

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HIP MORPHOLOGY IN A POPULATION BASED COHORT OF 1003 WOMEN

G.E. Thomas [1], D. Hunter [1], D. Hart [2], T. Spector [2], H.S. Gill [1], A. Judge [1,3], M.K. Javaid [1], A.J. Carr [1], S. Glyn-Jones [1], N.K. Arden [1,3]. [1] *NIHR BioMed. Res. Unit, NDORMS, Univ. of Oxford, Oxford, United Kingdom;* [2] *Dept. of Twin Res. & Genetic Epidemiology, Kings Coll., London, United Kingdom;* [3] *MRC Lifecourse Epidemiology Unit, Univ. of Southampton, Southampton, United Kingdom*

Purpose: Over the past decade, measures of hip morphology have been recognised as biomechanical risk factors for the development of hip osteoarthritis (OA).
The aim of this study was to characterize hip morphology in population cohort of 1003 women. A detailed description of morphology in a cohort of this size has not previously been undertaken and many of the morphological parameters described in the literature have not been measured in large enough cohorts for normal population reference ranges to be determined.
Methods: In 1989, 1003 women between 45 and 64 years of age who were registered at a general practice in North London were recruited. Each had an anteroposterior (AP) pelvis radiograph at year 2.
Each AP pelvis radiograph was then analysed with a validated programme for measuring morphology, HipMorf 2.0, (the software was developed in house using MATLAB version R2009a (The Math-works Inc, Natick, MA)). 23 morphological parameters in the pelvis, acetabulum and proximal femur were measured. These were Lateral Centre Edge angle, Horizontal toit externe angle, Alpha angle, Triangular Index, Extrusion Index, Modified Triangular Index Height, Sharp angle, Acetabular version, Acetabular Depth: Width ratio, Femoral Neck Shaft angle, Modified Proximal Femoral angle, Femoral head:neck ratio, Coxa profunda, Protrusio, Cross-over, Distance between centre of femoral heads, Distance between acetabulums, Neck width, Neck length, Femoral neck:length ratio, Joint Space Width and Kellgren & Lawrence grade.
All measurements were made by a single observer. Intraobserver repeatability was obtained by the re-measurement of 10 sets of radiographs (20 hips) after an interval of 4 weeks. Interobserver reproducibility had been previously assessed with 6 observers, using the same 10 sets of radiographs. All continuous variables were assessed for normality with use of frequency histograms and Q-Q plots. Intraobserver reproducibility of continuous variables was assessed by intraclass coefficients and Kappa analysis for binary variables. All the statistical calculations were performed using STATA statistical software version 12.0 and statistical significance was assumed when the p-value was <0.05.
Results: 793 radiographs (1586 hips) were of acceptable quality. Data was normally distributed for all continuous variables with the exception

Hip Morphology Measurements Summary (n = 793 AP Pelvis Radiographs)

Hip Morphological Parameter	Median	Range
Alpha Angle (degrees)	47.0	33.5-128.4
HTE (degrees)	3.8	0-38.0
	Mean	Standard Deviation
Lateral Centre Edge Angle(degrees)	30.9	7.4
Extrusion Index (ratio)	0.19	0.08
Modified Triangular (Gosvig) Index Height (mm)	19.6	2.2
Femoral neck shaft angle (degrees)	130.0	6.1
Femoral head to neck ratio	1.4	0.1
Minimum JSW (mm)	3.5	0.6
	Percentage Positive	
Protrusio acetabuli	1.1	
Coxa Profunda	53.4	
Crossover sign	4.6	
Triangular (Gosvig) Index	4.5	